

(No Model.)

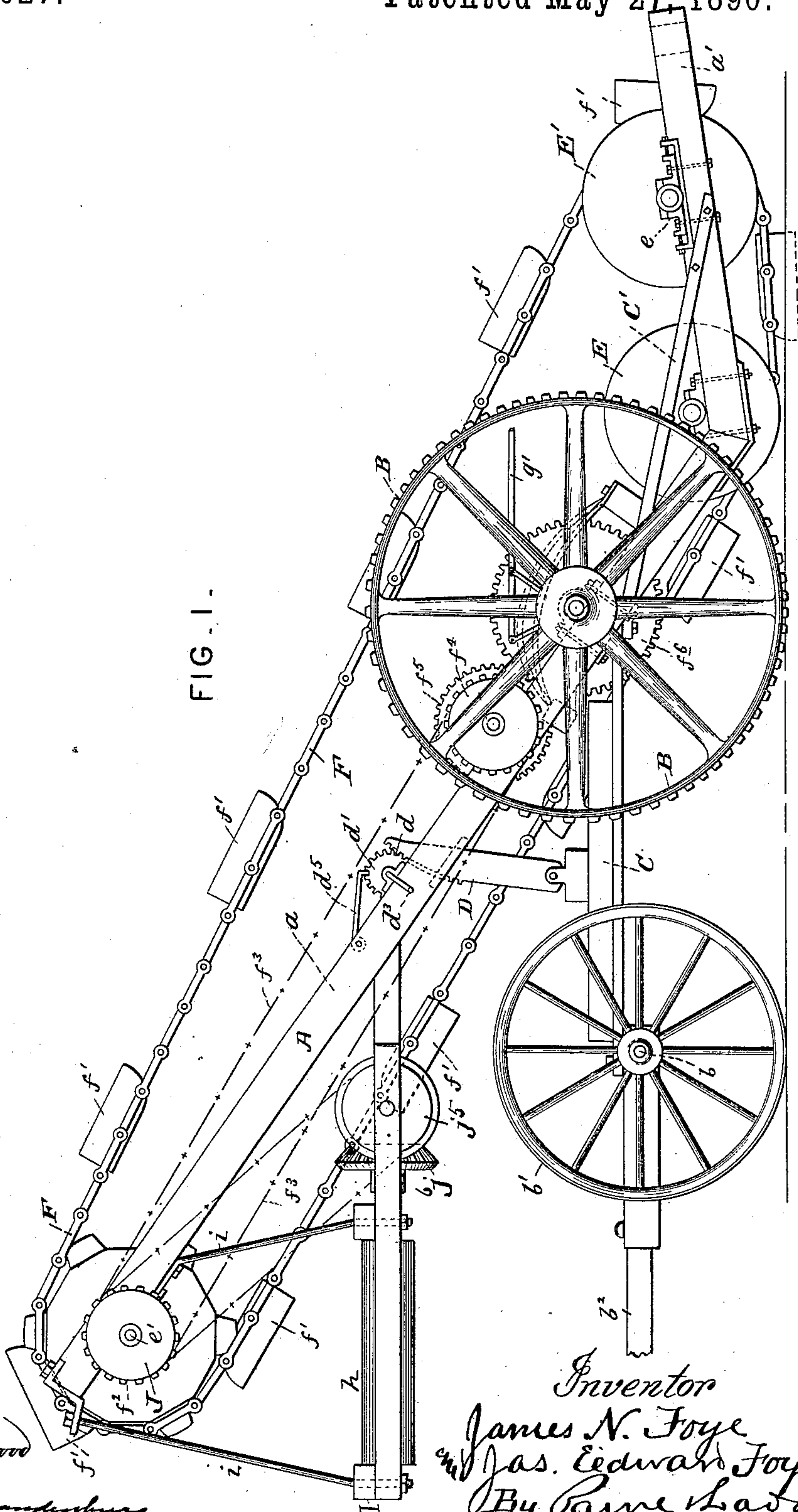
J. N. & J. E. FOYE.
EXCAVATOR.

4 Sheets—Sheet 1.

No. 429,027.

Patented May 27, 1890.

FIG. 1.



Attest:

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(No Model.)

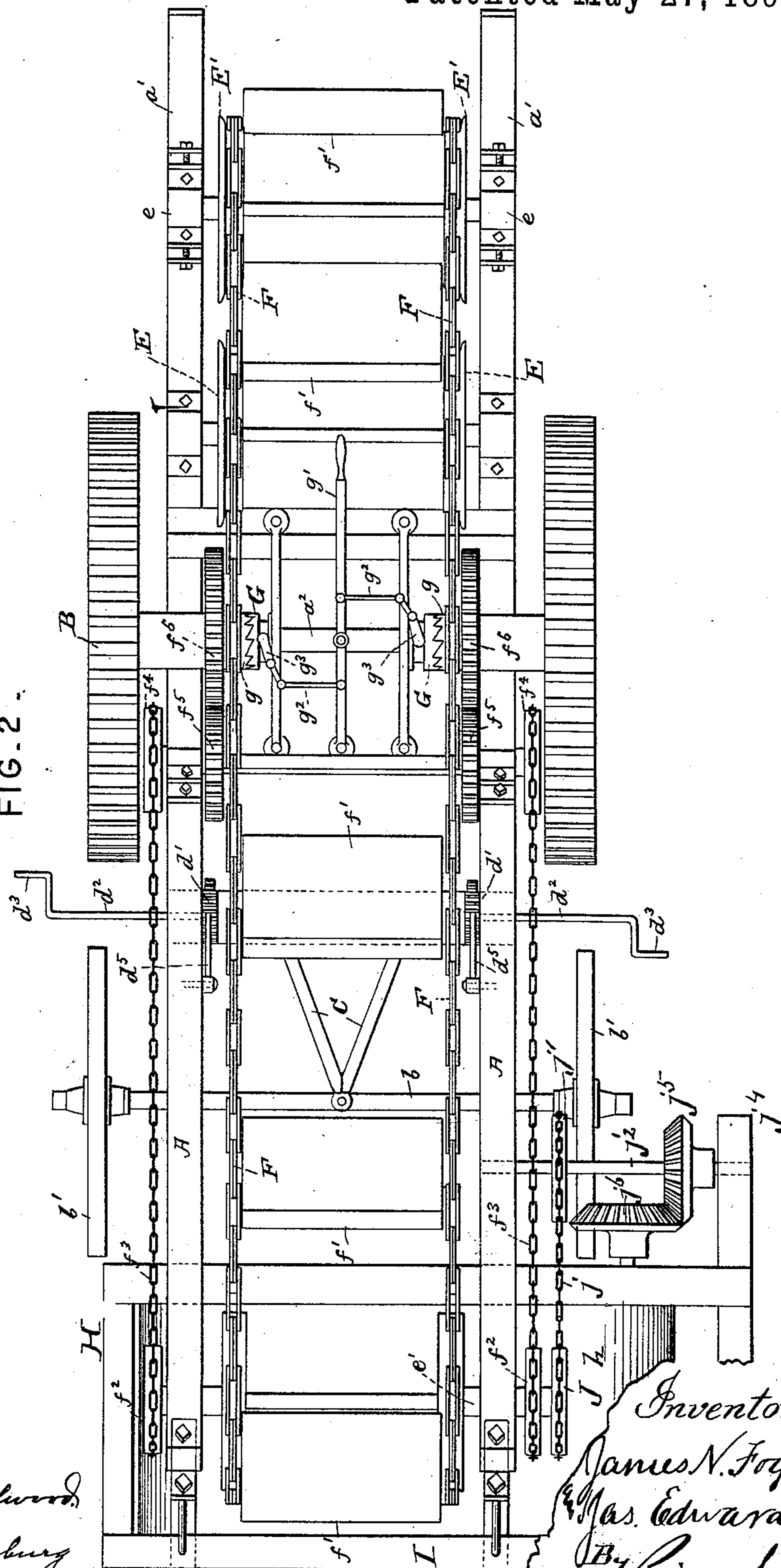
J. N. & J. E. FOYE.
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4 Sheets—Sheet 2.

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FIG. 2 -



Attest
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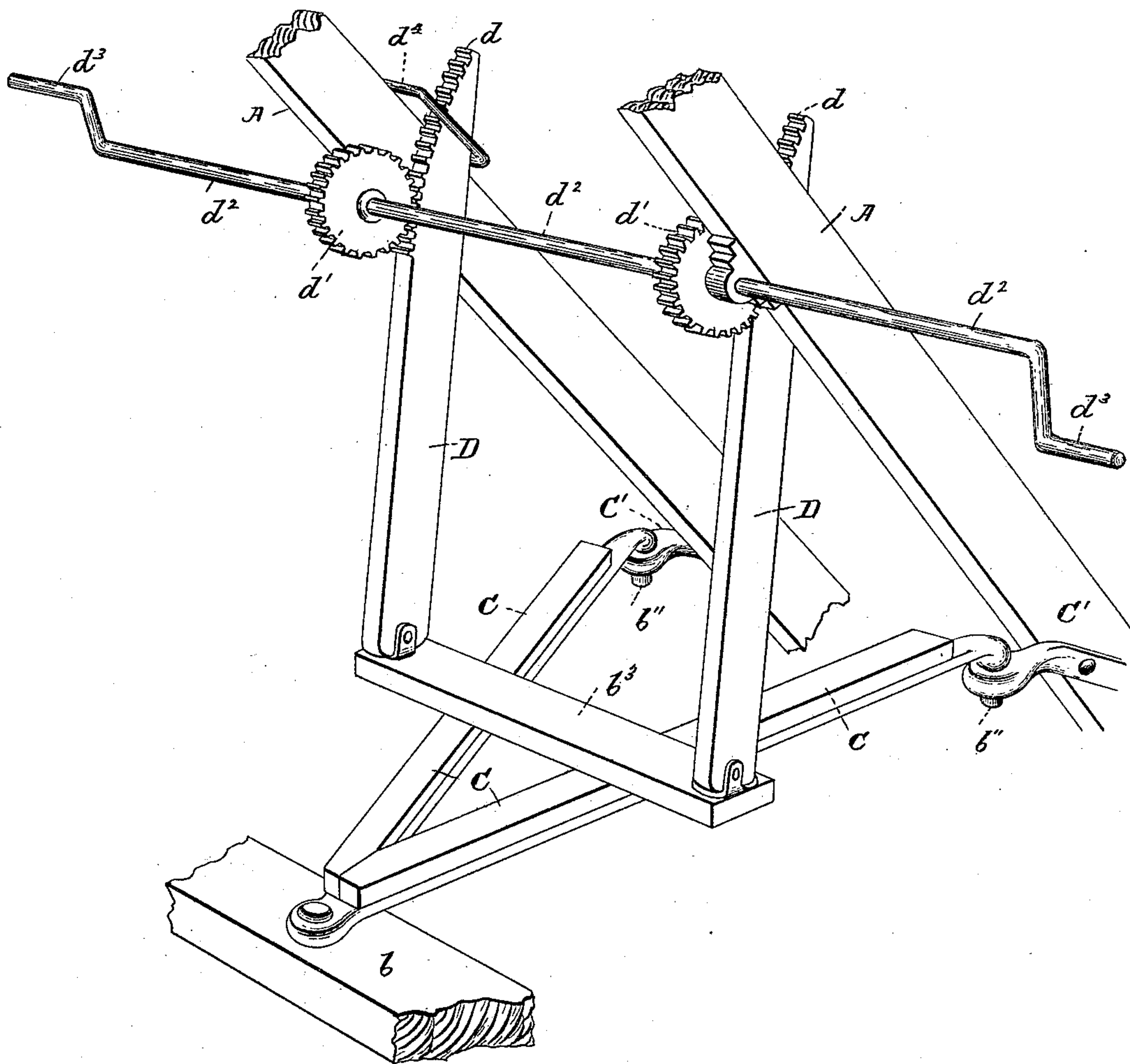
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FIG. 3.



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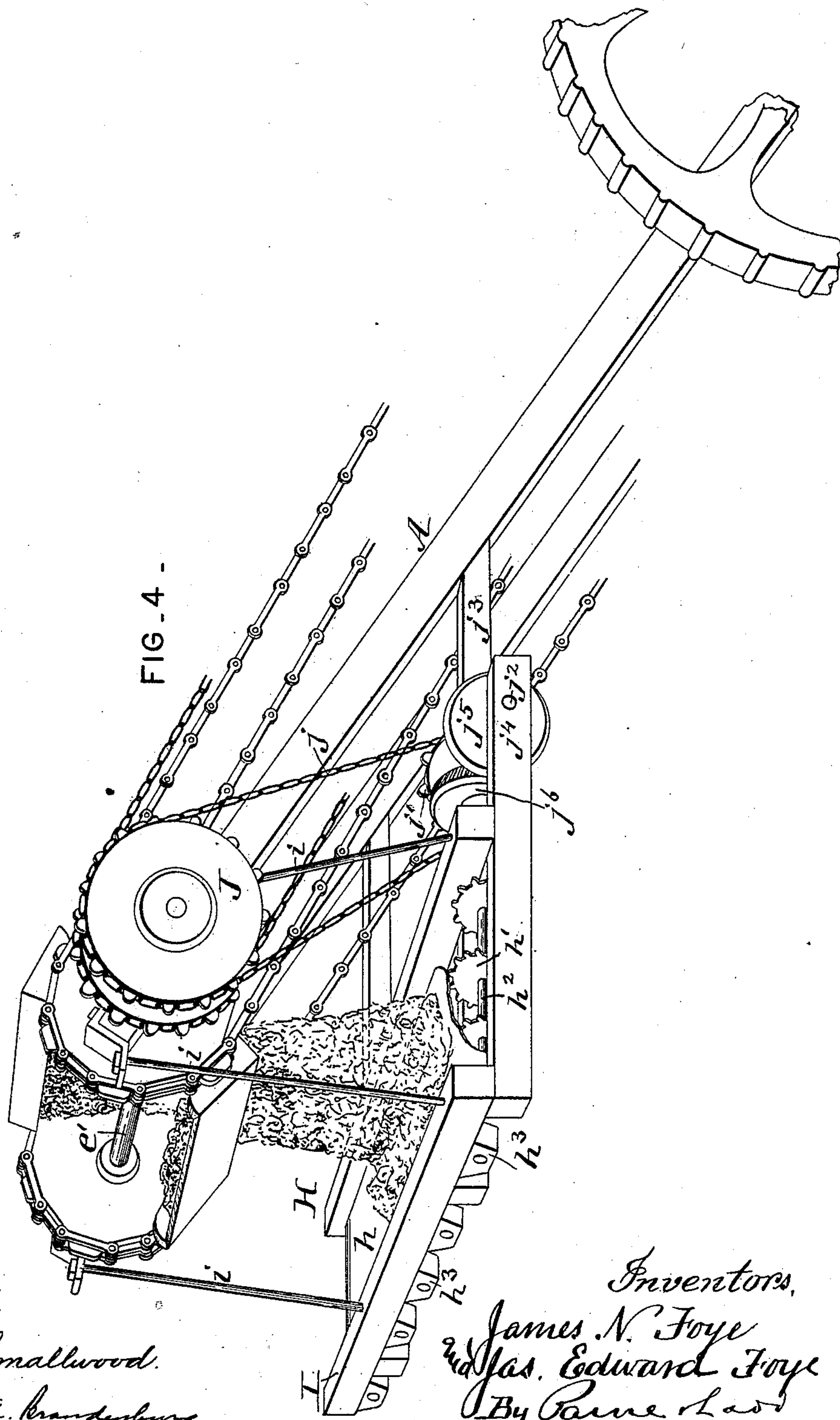
(No Model.)

4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

JAMES N. FOYE AND JAMES EDWARD FOYE, OF DUBUQUE, IOWA.

EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 429,027, dated May 27, 1890.

Application filed March 28, 1889. Serial No. 305,107. (No model.)

To all whom it may concern:

Be it known that we, JAMES N. FOYE and JAMES EDWARD FOYE, citizens of the United States, residing at Dubuque, in the county of Dubuque and State of Iowa, have invented certain new and useful Improvements in Excavators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention pertains to a new and improved excavator, having reference more particularly to such as is used in leveling roads; and it has for its object the production of simple and highly-efficient means for effecting the excavation and dumping of earth by a series of scrapers or shovels carried by revolving chain belts, the angle of contact of which scrapers or shovels is capable of regulation, as desired.

The invention comprises the detail construction, combination, and arrangement of parts, substantially as hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a view in side elevation of our improved excavator. Fig. 2 is a plan view thereof. Figs. 3 and 4 are enlarged detail views.

Referring to the drawings, A designates the frame, having an upper inclined portion a and a lower inclined portion a' , which diverge from the point of conjunction, as shown. This frame is pivotally secured to axle a^2 , to which the rear carrying-wheels B B are applied, said axle being designed, preferably, to revolve with said wheels.

C is a front platform of V shape connected at its forward end to axle b of the front carrying-wheels $b' b'$. To this axle is connected the tongue b^2 , either directly or by hounds. The rear hooked ends b'' of the bars comprising the V-shaped platform are connected to apertured ends of bracing-bars $C' C'$, secured to frame A.

To a cross-bar b^3 , attached to frame C, are loosely connected the lower ends of supporting-arms D D, provided at their upper ends with rack-bars $d d$, with which gear pinions

$d' d'$, fast on a shaft d^2 , attached to the frame A, the ends of said shaft having crank-handles $d^3 d^3$, as shown. The rack-bars of arms D are held in engagement with pinions d' by keeper-plates d^4 , secured to frame A and encompassing said arms D. A pawl d^5 , attached to frames A, engages one of the pinions d' and prevents any accidental reverse movement thereof. By turning shaft d^2 the frame A can be adjusted and held at the desired angle.

E E' are two drums secured at different altitudes to the rear portion of frame A, the shaft of the rearmost drum E' being held in adjustable boxes e . The object of this arrangement is to take up any slack in the endless chain belts F F, said belts being passed over grooved ends of said drums. At the upper forward end of frame A is secured a drum-shaft e' , having sprocket-wheels on its ends, over which the chain belts run.

To the chain belts F are secured scrapers or shovels f' , having vertical sides connected by a bottom plate, as shown. These scrapers or shovels are designed to enter or come in contact with the earth-surface at an angle obtained by securing the drums E E' at different altitudes. By this means a maximum amount of dirt is at once obtained in said scrapers or shovels.

To the ends of the shaft e' of the forward drum f are secured sprocket-wheels $f^2 f^2$, around which are passed endless sprocket-chains $f^3 f^3$, also encompassing sprocket-wheels $f^4 f^4$, secured to frame A, and upon whose shafts are slightly-larger gear-wheels $f^5 f^5$, which intermesh with gear-wheels f^6 , loosely secured on the axle a^2 . Through this described train of gearing motion is transmitted to the endless belts and scrapers.

G G are two clutches fast upon axle a^2 and designed to engage similar clutches $g g$ of wheels f^6 . These clutches G are thrown into or out of engagement by a series of levers. The main lever g' , which is fulcrumed at its forward end to a cross-piece of frame A, is connected by pitmen $g^2 g^2$ with short levers $g^3 g^3$, attached to loose-fitting collars of clutches G. By shifting lever g' the said clutches can be moved in the desired direction.

H is a carrier for conveying the earth dumped from the buckets to a cart or wagon

at one side of the machine. This carrier comprises an endless apron or belt h , passed over and around a series of wheels h' , whose shafts h^2 are supported at their ends by depending portions h^3 of a frame or platform I. This platform is held suspended from the upper end of frame A by inclined brace-rods i , secured thereto and to said frame.

An outer sprocket-wheel J is secured on shaft e' , and around it is passed a sprocket-chain j , which also encompasses a sprocket-wheel j' , secured to a stud or shaft j^2 , projecting from a bar j^3 of frame A, and supported at its outer end by an arm j^4 of platform I. Upon the shaft j^2 is a beveled pinion j^5 , gearing with a second similar pinion j^6 on the end shaft h^2 . By means of this described train of gearing motion is transmitted to the endless apron or belt, and all dirt dumped thereon from the scrapers or shovels is conveyed to and forced off at one end of the platform.

From the foregoing description it will be seen that the frame A is capable of being adjusted and held at the desired inclination, and that by means thereof the extent of the penetration of the scrapers or shovels into the earth is regulated, and that the rear drums by being at different altitudes direct the said scrapers or shovels into the earth at an angle which insures the collection of a maximum amount thereof.

We claim as our invention—

1. As an improvement in road-excavators, the combination, with the carrying-wheels and their axle, of the frame pivotally secured on said axle and having inclined or divergent front and rear portions, the endless belts, and the scrapers or shovels carried thereby, substantially as set forth.

2. As an improvement in road-excavators, the combination, with the carrying-wheels and their axle, of the adjustable frame pivotally secured on said axle and having inclined or divergent front and rear portions, the drums secured on said rear inclined portion, the forward shaft carrying sprocket-wheels, the endless chain belts, and the scrapers or shovels, substantially as set forth.

3. As an improvement in road-excavators,

the combination, with the carrying-wheels and their axle, of the frame pivotally secured on said axle and having inclined or divergent front and rear portions, the drums secured on said rear inclined portion, the forward shaft carrying sprocket-wheels, the endless chain belt, the shovels or scrapers, the front platform C, and the arms secured thereto and adjustably connected to said frame, substantially as set forth.

4. The herein-described improved excavator, comprising the inclined pivoted frame, the front platform, the pivoted arms having rack-bars secured thereto, the shaft having handled ends, and the pinions engaging said rack-bars, substantially as set forth.

5. As an improvement in road-excavators, the combination, with the carrying-wheels and their axle, of the frame pivotally secured on said axle and having inclined or divergent front and rear portions, the drums secured on said frame at different altitudes, and the endless chain belts carrying scrapers or shovels, substantially as set forth.

6. The herein-described improved excavator, comprising the carrying-wheels and their axle, the frame pivoted thereon and having inclined or divergent front and rear portions, the front platform, the arms for holding said frame at the desired angle, the sprocket-wheels secured to the upper end of said frame, the rearward drums secured at different altitudes, the endless chain belts carrying scrapers or shovels, and the described train of gearing, substantially as set forth.

7. The combination, with the frame A, of the platform secured to the upper forward end thereof, the series of wheels, the endless apron or belt passed over said wheels, and the series of sprocket-wheels, pinions, and belts for imparting motion to said belt or apron, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES N. FOYE.

JAS. EDWARD FOYE.

Witnesses:

F. O. UDALL,

CHAS. J. BRAYTON.